Morgans: Notes on the operation of two winding engines. The operations of the winding engines while engaged on various classes of work were recorded by means of a tachograph, the readings of which in diagram form were reproduced by the author, and afforded an interesting evidence of the characteristics of the different operations and their influence on the winding power.—E. P. Corbett **Sullivan**: Stoping at the Calamon Mine. A note on the method of stoping and filling adopted recently at the Calamon Mine. A conspicuous feature of the work is the preparation of inclined cuts, which are worked from the level upwards, and filled in practically in an automatic manner as the work proceeds.

PARIS.

Academy of Sciences, January 22.—M. Lippmann in the chair.—B. **Baillaud**: The accuracy of the knowledge of the time at the Observatory of Paris during the last months of 1911 and the commencement of January, 1912. A description of a new astronomical clock, Riefler D No. 228, recently presented to the observatory. The correction formula deduced from two months' observations is $C = -1{\cdot}54\text{s.} - 0{\cdot}20\text{s.}\, t - 0{\cdot}0015\text{s.}\, t^2$, and a comparison of the deviations of the observed values and those calculated from this formula gives a mean deviation of 0·03s.—L. E. **Bertin**: Presentation of some documents relating to the protection of warships and to dynamic stability.—Charles **Moureu** and Amand **Valeur**: The degradation of sparteine. The formation of a new hydrocarbon, sparteilene. In a previous paper it has been shown that by the successive application of Hofmann's method to the alkaloid sparteine an unsaturated base, methylhemisparteine, was the final product. Further application of the same method gives a dimethylhemisparteilene and a hydrocarbon, sparteilene, $C_{15}H_{20}$, the physical and chemical properties of which are given. Lack of material has prevented the determination of the constitution of this hydrocarbon.—A. **Müntz** and H. **Gaudechon**: The awakening of the soil. Experiments are given tending to show that the nitrifying organisms in soil commence to become active at a definite date, and this activity is not due to changes of temperature. The samples of soil, taken at different dates, were preserved at a constant temperature of 2° C., and all the other conditions of the experiments, including that of temperature, were kept rigorously constant. The maximum action was found to be between March 28 and April 25.—Léon **Labbé**: A potato disease, *la teigne*. An account of the measures taken to combat this disease.—A. **Lacroix**: The volcano of Reunion. A detailed description of the present condition of the volcano.—Paul **Sabatier** and A. **Mailhe**: The catalytic formation of the esters of the formenic series, starting with the formic esters. A mixture of isobutyric acid and methyl formate was passed in the state of vapour over titanium oxide at a temperature of about 250° C. Carbon monoxide was evolved, and the condensed liquid contained, besides methyl alcohol and unchanged isobutyric acid, methyl isobutyrate and an appreciable quantity of isobutyric aldehyde. No isobutyrone was found. Similar results were obtained by substituting isoamyl formate for the methyl formate. The substitution of thoria for titanium oxide as the catalytic material somewhat modifies the reaction.—M. **Bourgeois**: The results of the observations made by wireless telegraphy of the difference of longitude between Paris and Bizerta obtained by MM. Noirel and Bellot. Details are given of the method of observation, the mean error of the mean of a series being 0·04 to 0·05 sec.—Serge **Bernstein**: The asymptotic value of the best approximation of $|x|$.—H. **Parenty**: The progressive regulation of pressures at the entrance of a main distributing water, gas, or vapour. A detailed description of the instrument, with diagrams.—F. **Ollive**: The elastic pressure of saturated vapours. A new exponential formula is developed, and the figures calculated according to this formula for water vapour are compared with the experimental results.—L. **Decombe**: The theory of dielectrics. An investigation into the causes of the residual effects in dielectrics.—A. **Rothé**: The reception of meteorological radio-telegrams with reduced antennæ.—G. **Austerweil**: The passage of hydrogen through the rubber tissue of aërostats. Rubber, which is commonly employed as a waterproofing agent in balloon fabrics, is not a very suitable material for this purpose, as it absorbs hydrogen and allows the passage of the gas. Figures are given of the actual losses of hydrogen over a period of twenty days.—E. **Baud**: A general law of solution.—Daniel **Berthelot** and Henry **Gaudechon**: The photolytic decomposition of smokeless powders by the ultra-violet rays. The effects of the light from a quartz mercury vapour lamp on pure nitroglycerol and nitrocellulose were first studied, and then smokeless powders containing amyl alcohol and diphenylamine were examined. Tables are given showing the amount and composition of the gases evolved.—Camille **Matignon**: The synthetic formation of nitrous oxide. The application of the Nernst formula to the known thermochemical data of nitrous oxide shows that the amount of this gas formed from a mixture of nitrogen and oxygen at atmospheric pressure at a temperature of 2700° C. would be of the order of 2 in 100,000; at high pressures the amount might be higher.—D. **Tschernobaeff** and L. **Wolgodine**: The heats of formation of some silicates.—Louis **Hackspill** and Robert **Bossuet**: Some new alkaline phosphides. By working in a high vacuum with highly purified materials it has been found that the four alkali metals may be combined with phosphorus without explosion. The phosphides of cæsium, rubidium, potassium, and sodium thus obtained had the composition expressed by the formula M_2P_5.—G. D. **Hinrichs**: The true atomic weight of silver deduced from the experimental results of more than a century. The graphical method used in previous communications by the author has been applied to the data of Berzelius, Mather, Marignac, Stas, Maumené, Dumas, Baxter, Penny, Smith, and Richards. Taking the atomic weight of carbon as 12, the author concludes that the true atomic weight of silver is 108 exactly.—MM. **Portevin** and **Nusbaumer**: The influence of tempering upon bearing bronzes.—V. **Hasenfratz**: The bromine compounds of the alkaloids of *Peganum harmala*, and their basic derivatives.—P. **Carré**: The constitution of the glycerophosphoric acid obtained by the esterification of glycerol by means of phosphoric acid or the monosodium phosphate.—Marcel **Guerbet**: The action of caustic potash upon the secondary alcohols. The diagnosis of primary and secondary alcohols of high molecular weight. If an alcohol of high molecular weight is heated in a sealed tube to 230° C. with its own weight of potash, a primary alcohol gives a product entirely soluble in water; secondary alcohols undergo condensation, and the product on treating with water separates into two layers.—Étienne **Foëx**: The presence of two sorts of conidiophores in *Oidiopsos taurica*.—W. **Lubimenko** and A. **Froloff-Bagreief**: The influence of light on the fermentation of grape must.—Raoul **Dupuy**: Backwardness in infants and endocrinian polyopotherapy.—M. **Stapfer**: The utero-ovarian rhythm in woman.—R. **Pigache** and I. **Worms**: The thymus considered as an internal secretion gland.—H. **Colin** and A. **Sénéchal**: Is iron the catalysing agent in the oxidation of phenols by Raifort's peroxydiastase?—O. **Boudouard**: The smells of Paris. Unpleasant smells were particularly marked during the summer of 1911. A study of the conditions under which unpleasant smell may arise from manure works in Paris.—Georges **Bohn**: The sensibility of animals to variations in pressure.—Louis **Calvet**: *Watersia paessleri*, a parasite of *Polyzoa gordiana*.—A. **Legendre**: The *massif* of Ya-Long, western China, between 28° and 30°.

BOOKS RECEIVED.

A Monograph of the Mycetozoa. A Descriptive Catalogue of the Species in the Herbarium of the British Museum. By A. Lister, F.R.S. Second edition, revised by G. Lister. Pp. v+302+201 plates. (London: British Museum (Natural History); Longmans and Co., and others.) 30*s*.

The Evolution of Animal Intelligence. By Prof. S. J. Holmes. Pp. v+296. (New York: H. Holt and Co.)

Heaton's Annual, 1912. Pp. 562. (Toronto: Heaton's Agency; London: Simpkin and Co., Ltd.) 5*s*.

Wonders of Plant Life. By S. L. Bastin. Pp. x+136. (London: Cassell and Co., Ltd.) 3*s*. 6*d*. net.

Heredity in Relation to Eugenics. By C. B. Davenport.

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Pp. xi+298. (New York: H. Holt and Co.) 2 dollars net.

Who's Who in Science (International), 1912. Edited by H. H. Stephenson. Pp. xvi+323. (London: J. and A. Churchill.) 6*s.* net.

Church's Laboratory Guide. Ninth edition. Revised and largely rewritten by Prof. E. Kinch. Pp. xvi+368. (London: Gurney and Jackson.) 6*s.* 6*d.* net.

Handwörterbuch der Naturwissenschaften. Edited by E. Korschelt and others. Erste Lieferung. Pp. 1–160. (Jena: G. Fischer.) 2.50 marks.

Journal of the Institute of Metals, No. 2, Vol. vi., 1911. Pp. viii+369. (London: Caxton House, S.W.) 21*s.* net.

Meddelanden från Statens Skogsförsöksanstalt. Häftet 8, 1911. Pp. 279+xxiii. (Stockholm.) 2.25 kronor.

The A.B.C. Guide to Astronomy. By Mrs. H. Periam Hawkins. Pp. iv+120. (London: Simpkin and Co., Ltd.) 1*s.* 6*d.* net.

Spices. By H. N. Ridley, C.M.G., F.R.S. Pp. ix+449. (London: Macmillan and Co., Ltd.) 8*s.* 6*d.* net.

Manual Training Woodwork Exercises treated Mathematically. By F. E. Drury. Pp. xi+215. (London: G. Bell and Sons, Ltd.) 2*s.* 6*d.*

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 1.

Royal Society, at 4.30.—The Bacterial Production of Acetylmethylcarbinol and Butylene Glycol from Various Substances: Dr. A. Harden, F.R.S., and Miss D. Norris.—The Chemical Action of Bacillus Cloacæ (Jordan) on Glucose and Mannitol: J. Thompson.—On the Distribution of the Nerves of the Dental Pulp: J. H. Mummery.—A Method for Isolating and Cultivating the Mycobacterium Pseudo Tuberculosis enteritidis bovis (Jöhne), and some Experiments on the Preparation of a Diagnostic Vaccine for Pseudo Tuberculosis enteritis of bovines: F. W. Twort and G. L. Y. Ingram.—On the Fossil Flora of the Forest of Dean Coalfield (Gloucestershire), and the Relationship of the Coalfields of the West of England and South Wales: E. A. N. Arber.—Simultaneous Colour Contrast: Dr. F. W. Edridge-Green.—Studies on Enzyme Action. XIV.—Urease, a Selective Enzyme: Prof. H. E. Armstrong, F.R.S., and E. Horton.

Linnean Society, at 8.—Fourmis des Seychelles reçues de M. Hugh Scott: Prof. A. Forel.—Tipulidæ from the Indian Ocean: F. W. Edwards.—Sciaridæ, mit einem Anhang von Dr. J. J. Kieffer (Beschreibung neuer Sciariden von den Seychellen Inseln): Dr. Günther Enderlein.—Ichneumonidæ from the Indian Ocean: C. Morley.—New Fishes from Aldabra and Assumption, collected by Mr. J. C. F. Fryer: C. Tate Regan.

Royal Institution, at 3.—The Phenomena of Splashes: Prof. A. M. Worthington, C.B., F.R.S.

FRIDAY, FEBRUARY 2.

Royal Institution, at 9.—Vital Effects of Radium and other Rays: Sir J. M. Davidson.

Institution of Civil Engineers, at 8.—Steam-turbines: Some Practical Applications of Theory: Captain H. Riall Sankey, R.E.

Geologists' Association, at 7.30.—Annual General Meeting.—Presidential Address; Rocks containing Radiolaria: William Hill.

MONDAY, FEBRUARY 5.

Victoria Institute, at 4.30.—The Historicity of the Mosaic Tabernacle: Rev. Prof. J. Orr.

Society of Engineers, at 7.30.—Presidential Address: John Kennedy.

Aristotelian Society, at 8.—The Relation of Willing to Cognition: Prof. G. Dawes Hicks.

Society of Chemical Industry, at 8.—*Discussion:* The Industrial Bursaries Scheme of the Commissioners of the 1851 Exhibition.—*Papers:* Constant Temperature Heating Apparatus for Explosives; Experiments on the Decomposition of Nitro-Cellulose: J. S. S. Brame.—Some Physical Constants of Structureless Cellulose Filaments (Artificial Silk): W. P. Dreaper and J. G. Davis.

Royal Society of Arts, at 8.—The Meat Industry: L. M. Douglas.

TUESDAY, FEBRUARY 6.

Royal Institution, at 3.—The Study of Genetics: Prof. W. Bateson, F.R.S.

Zoological Society, at 8.30.—Report on the Deaths which occurred in the Zoological Gardens during 1911: H. G. Plimmer, F.R.S.—On Experimental Pheasant Breeding: Mrs. R. Haig Thomas.—Mendelian Experiments on Fowls: J. T. Cunningham.—A Further Collection of Mammals from Egypt and Sinai: J. Lewis Bonhote.—On the Pairing of Pseudoscorpiones: H. Wallis Kew.

Royal Anthropological Institute, at 8.15.—The Kayak in North-Western Europe: D. MacRitchie.

Röntgen Society, at 8.15.—After-glow in Vacuum Discharge Tubes: Hon. R. J. Strutt, F.R.S.

Institution of Civil Engineers, at 8.—The Water-supply of the Witwatersrand: D. C. Leitch.—Investigations Relating to the Yield of a Catchment-area in Cape Colony: E. C. Bartlett.

WEDNESDAY, FEBRUARY 7.

Society of Public Analysts, at 8.—Annual General Meeting.—Notes on the Determination of Butter Fat and Cocoanut Oil in Margarine: F. W. F. Arnaud and H. Hawley.—The Souring of Milk: H. Droop Richmond and H. C. Huish.—A Flour Improver: E. Hinks.

Entomological Society, at 8.—On the Comparative Anatomy of the Genital Tube in ♂ Coleoptera: D. Sharp and F. Muir.—On Some Hitherto Imperfectly-known South African Lepidoptera: Roland Trimen.—Notes on Australian and Tasmanian *Scydmænidæ*, with descriptions of New Species: A. M. Lea.

Royal Society of Arts, at 8.—The Influence of Ozone in Ventilation; Leonard Hill, F.R.S., and Martin Flack.

Geological Society, at 8.—On an Inlier of Longmyndian and Cambrian Rocks at Pedwardwine (Herefordshire): Dr. A. H. Cox.

THURSDAY, FEBRUARY 8.

Royal Society, at 4.30.—*Probable Papers:* The Spectrum of Comet Brooks (1911*c*): Sir N. Lockyer, K.C.B., F.R.S.—A Chemically-active Modification of Nitrogen produced by the Electric Discharge. III.: Hon. R. J. Strutt, F.R.S.—The Atomic Weight of Radium: R. Whytlaw-Gray and Sir W. Ramsay, K.C.B., F.R.S.—An Optical Determination of the Variation of Stress in a Thin Rectangular Plate subjected to Shear: Prof. E. G. Coker.—Spectroscopic Observations. Lithium and Cæsium: Dr. P. V. Bevan.—The Observation by means of a String Electrometer of Fluctuations in the Ionisation produced by γ rays: Prof. T. H. Laby and P. W. Burbidge.

Royal Institution, at 3.—The Phenomena of Splashes: Prof. A. M. Worthington, C.B., F.R.S.

Institution of Electrical Engineers, at 8.—High Voltage Tests and Energy Losses in Insulating Materials: E. H. Rayner.

Royal Society of Arts, at 4.30.—The North-East Frontier of India: Sir Thomas H. Holdich, K.C.M.G., F.R.S.

FRIDAY, FEBRUARY 9.

Royal Institution, at 9.—Very High Temperatures: Dr. J. A. Harker, F.R.S.

Physical Society, at 8.—Annual General Meeting.

Royal Astronomical Society, at 5.—Anniversary Meeting.

Royal Geographical Society, at 5.30.—Desert of North Africa: Captain H. G. Lyons, F.R.S.

Institution of Civil Engineers, at 8.—Steam-turbines: Some Practical Applications of Theory: Captain H. Riall Sankey, R.E.

Physical Society, at 8.—Annual General Meeting.—Presidential Address: Prof. A. Schuster, F.R.S.

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